

## COMMENTARY ON GASP OBJECTION TO "REUSING" QUENCH WATER AT CLAIRTON WORKS, USS.

### 1. Quench Tower Operation.

Typically 10 to 15 tons of hot (2000+°F) coke are sprayed by 4,000 to 6,000 gal of quench water every 10 to 15 minutes; the quenching of each load takes 1.5 to 2.5 minutes. During each quenching cycle the incandescent coke quickly cooled to about 250°F.

In the process, 1,000 to 1,500 gal of quenching water are lost to the atmosphere due to evaporation. Most of the remaining water runs off the coke and back to the sump through a return ditch. An analysis of the water mass balance indicates that small amounts are carried out with the coke and are lost through evaporation from the sump and spray header tank. There is usually no quenching wastewater, because the water used is recycled to extinction.

It has been a common practice in the U.S. steel industry to utilize the contaminated process wastewater from accompanied by-product recovery plants as a convenient source of the make-up water supply for quenching operations.

### 2. Environmental Impact.

The quality of water used for quenching is one of the specific factors which affects emission rate, chemical composition, and associated health hazards. The phrase "...the water used for such quenching [shall be] equivalent to, or better than,... in the nearest stream or river..." in the Allegheny County SIP (Article XX, Section 520) refers to the spraying coke with water containing low Total Dissolved Solids (on the order of 750 mg/l) concentrations and mixed with "clean" make-up water of the same quality as is dischargeable to the nearest river.

The GASP's suggestion that "...used water should be [after each quench] piped off..." and replenished with 100% "new clean" water is contradicted with industry standard practice, provided very little environmental benefit (if any) at a greatly increased cost, and, probably, not enforceable due to the lack of pertinent regulations.

It should also be noted, that implementation of the GASP's proposal would be in conflict with EPA's Pollution Prevention Program which calls for recycling of the hazardous materials to the greatest extent possible.

### 3. Discussion.

It has been demonstrated that two major sources of organic matter found in coke quench tower emissions are contaminated quench make-up water and "green" coke. The organic matter is trapped in the coke when the process of thermal distillation has not been completed and the coke is "green"

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## Coke Ovens (Cont'd)

E. **Offtake Piping.** No person shall operate, or allow to be operated, any battery of coke ovens in such manner that, at any time, there are visible emissions from more than five percent (5%) of the offtake piping on the operating coke ovens of such battery.

F. **Pushing.** No person shall operate, or allow to be operated, any battery of coke ovens unless there is installed on such battery a pushing emission control device which is designed to reduce fugitive emissions from pushing to the minimum attainable through the use of Best Available Control Technology, nor shall any person operate, or allow to be operated, any battery of coke ovens in such manner that:

1. At any time, the particulate mass emission rate from the pushing emission control device exceeds a rate determined by an outlet concentration of 0.020 grains per dry standard cubic foot, or the rate determined by the following formula, whichever is greater:

$$A = 0.76W^{0.42} \quad \text{where } A = \text{allowable mass emission rate in pounds per hour per battery, and}$$

$$W = \text{actual coke pushing rate in tons of coke per hour per battery;}$$

2. Fugitive pushing emissions or emissions from the pushing emission control device outlet equal or exceed No. 1 on the Ringelmann Scale or equivalent opacity at any time, except if the Director determines in writing, upon written application from the person responsible for the coke ovens setting forth all information needed to make such determination, that such emissions are of only minor significance with respect to causing air pollution and do not prevent or interfere with the attainment or maintenance of any ambient air quality standard (any such determination shall be submitted as a proposed revision to Allegheny County's portion of the Pennsylvania Implementation Plan); or,

3. Visible emissions from the transport of hot coke in the open atmosphere exceed ten percent (10%) opacity at any time.

G. **Combustion Stacks.** No person shall operate, or allow to be operated, any battery of coke ovens in such manner that, at any time, emissions from the combustion stack serving such battery:

1. Exceed a particulate concentration of 0.030 grains per dry standard cubic foot;
2. Equal or exceed No. 1 on the Ringelmann Scale or an equivalent opacity for a period or periods aggregating in excess of three (3) minutes in any sixty (60) minute period; or,
3. Equal or exceed No. 3 on the Ringelmann Scale or an equivalent opacity.

H. **Quenching.** No person shall quench, or allow the quenching of, coke unless the emissions from such quenching are vented through a baffled quench tower and the water used for such quenching is equivalent to, or better than, the water quality standards established for the nearest stream or river by regulations promulgated by the Department of Environmental Resources under the Pennsylvania Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. 691.1 et seq., except that water from the nearest stream or river may be used for the quenching of coke.

I. **Measurements.** Measurements of coke oven emissions shall be performed according to the applicable procedures established by Section 607 of this Article. Measurements of water quality shall be performed according to procedures established or approved by the Department of Environmental Resources.

*Slag Quenching (Cont'd)*

- C. For hard slag ladle pits which began operation after September 7, 1977, the owner or operator shall utilize the Best Available Control Technology and shall not pour more than 2,300 tons of molten slag per day per acre of the new hard slag ladle pit; provided, however, if the owner or operator demonstrates to the satisfaction of the Director that the use of an alternative control technique will result in the emission of air contaminants less than or equal to that emitted by the use of the maximum daily pouring rate, then the Director may permit the owner or operator to utilize such control technique in lieu of the maximum daily pouring rate.

**§520. COKE OVENS**

- A. **Definitions.** For purposes of this Section, the following words and phrases shall have the meaning stated:
1. "Charging emissions" means any emissions occurring during the introduction of coal into the coke oven from the time that the gate(s) on the larry car coal hopper is opened or mechanical feeders start the flow of coal into the oven until the last charging port seal is replaced. Charging emissions include any air contaminant emitted from one or more charging ports, spaces between the charging port rings and the oven refractory, drop sleeves, larry car hoppers and any associated air pollution control equipment, but shall not include emissions occurring during the temporary removal of a charging port seal for the purpose of sweeping excess coal spillage into the oven just charged, after such seal has been firmly seated over the charging port following the removal of the larry car.
  2. "Charging port" means any opening through which coal is, or may be, introduced into a coke oven, whether or not such opening is regularly used for such purpose.
  3. "Door area" means the vertical face of a coke oven between the bench and the top of the battery and between two adjacent buckstays, including but not limited to, the door, chuck door, door seal, jamb, and refractory.
  4. "Offtake piping" means the pipes or ducts by which gaseous by-products of coking are transported from one end of an oven to a coke oven gas collector main, including the standpipe, standpipe cap and slipjoint, and also including jumper pipes.
  5. "Pushing" means the operation by which coke is removed from a coke oven and transported to a quench station, beginning when the coke side door is first removed from a coke oven and continuing until the quenching operation is commenced.
- B. **Charging.** No person shall operate, or allow to be operated, any battery of coke ovens in such manner that the aggregate of visible charging emissions exceeds a total of seventy-five (75) seconds during any four (4) consecutive charges on such battery.
- C. **Door Areas.** No person shall operate, or allow to be operated, any battery of coke ovens in such manner that:
1. At any time, there are visible emissions from more than ten percent (10%) of the door areas of the operating coke ovens in such battery, excluding the two door areas of the last oven charged and any door areas obstructed from view; or,
  2. Emissions from the door areas of any coke oven exceed No. 2 on the Ringelmann Scale or equivalent opacity at any time fifteen (15) or more minutes after such oven has been charged.
- D. **Charging Ports.** No person shall operate, or allow to be operated, any battery of coke ovens in such manner that, at any time, there are visible emissions from more than two percent (2%) of the charging ports or charging port seals on the operating coke ovens of such battery.

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expert witness fees) to the party or parties against whom such action was brought in any case where the court finds that such action was unreasonable.

The ACHD Article XX contains the relevant SIP provisions limiting the emission of raw COG to the atmosphere and the quenching of hot coke with dirty water. Those provisions are set forth below in pertinent part:

Section 520 Coke Ovens

H. Quenching. No person shall quench, or allow the quenching of, coke unless the emissions from such quenching are vented through a baffled quench tower and the water used for such quenching is equivalent to, or better than, the water quality standards established for the nearest stream or river by regulations promulgated by the Department of Environmental Resources under the Pennsylvania Clean Stream Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. 691.1 et seq., except that water from the nearest stream or river may be used for the quenching of hot coke.

Section 530 Coke Oven Gas

Except as provided for in Section 520 of this Article, no person shall operate, or allow to be operated, any source in such manner that unburned coke oven gas is emitted into the open air.

III. DESCRIPTION OF DEFENDANT

A. Description of defendant

USX Corporation consists of the following operating units: USS (the nation's largest steel producer at 11.5 million tons in 1987), Marathon Oil (an integrated oil company), Texas Oil & Gas (a producer of natural gas) and U.S. Diversified Group (chemical manufacturing and transportation). U.S. Steel changed its name to USX in 1986 to reflect its move into the oil business. Oil industry activities account for more than 50% of revenues of USX. U.S. Steel acquired Marathon Oil Co. in 1982, and Texas Oil and Gas Corporation in 1986. In 1988, USX's sales consisted of refined products (50%), crude oil and condensate (10%), natural

